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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,183	09/17/2003	James M. Brenner	100201592-1	5565

7590 07/19/2006

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

FIDLER, SHELBY LEE

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 07/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,183

Applicant(s)

BRENNER, JAMES M.

Examiner

Shelby Fidler

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/17/03.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 12, 13, 15-18, 22-24, 26-28, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Kimura et al. (US 6796627 B2).

Kimura et al. teach the following:

***regarding claim 1**, a method for refilling a print cartridge reservoir, comprising:

tracking an ink volume in the print cartridge reservoir (subtank consumed ink counter 109; step S12, Fig. 17 and col. 19, lines 16-18);

tracking an ink volume in a supply tank (main tank residual ink counter 110; step S20, Fig. 17 and col. 19, lines 57-59); and

refilling the print cartridge reservoir from the supply tank (step S13, Fig. 17 and col. 5, lines 14-18) when the ink volume in the supply tank substantially equals an ink volume to refill the print cartridge reservoir to a predetermined level (col. 6, lines 55-58)

***regarding claim 2**, tracking the ink volume in the print cartridge reservoir includes using software (consumed ink amount calculator 107, col. 27, lines 16-18) to track ink consumption during print job processing (col. 16, lines 42-51)

***regarding claim 12**, a method for refilling a print cartridge reservoir, comprising:

tracking an ink volume consumed from the print cartridge reservoir during job processing (col. 16, lines 42-51);

tracking an ink volume in a supply tank (main tank residual ink counter 110; step S20, Fig. 17 and col. 19, lines 57-59);

refilling the print cartridge reservoir from the supply tank (step S13, Fig. 17 and col. 5, lines 14-18) when the print cartridge is empty (col. 24, lines 52-58 and steps S42-44, Fig. 23); and

refilling the print cartridge reservoir when a remaining ink volume available in the supply tank substantially equals an ink volume consumed since a previous print cartridge reservoir refill (col. 6, lines 53-61; since the amount of ink in the subtank is almost constant because of refilling, then there must be a volume remaining in the supply tank that equals an ink volume consumed since the last refilling)

***regarding claim 13**, a computer readable medium having a set of computer executable instructions thereon for causing a device to perform a method (col. 17, lines 21-25), comprising:

tracking an ink volume in a print cartridge reservoir (subtank consumed ink counter 109; step S12, Fig. 17 and col. 19, lines 16-18);

tracking an ink volume in a supply tank (main tank residual ink counter 110; step S20, Fig. 17 and col. 19, lines 57-59);

refilling the print cartridge reservoir on a variable frequency based on both tracked print cartridge reservoir and supply tank ink volumes (step S12, Fig. 17 and step S20, Fig. 17); and

wherein refilling occurs when an ink volume consumed from the print cartridge since its last refill substantially equals a total ink volume remaining in the supply tank (e.g. steps S13-S17, Fig. 17)

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***regarding claim 15**, executable instructions to control the transfer of ink from the supply tank to the print cartridge reservoir (col. 6, lines 48-58)

***regarding claim 16**, the executable instructions control a pumping session of a peristaltic pump (col. 5, lines 31-36 and col. 16, lines 26-29)

***regarding claim 17**, a computer readable medium having a set of computer executable instructions thereon for causing a device to perform a method (col. 17, lines 21-25), comprising:

tracking an ink volume in a print cartridge reservoir (subtank consumed ink counter 109; step S12, Fig. 17 and col. 19, lines 16-18);

tracking an ink volume in a supply tank (main tank residual ink counter 110; step S20, Fig. 17 and col. 19, lines 57-59); and

refilling the print cartridge reservoir from the supply tank (step S13, Fig. 17 and col. 5, lines 14-18) when the ink volume in the supply tank substantially equals an ink volume to refill the print cartridge reservoir to a predetermined level (col. 6, lines 55-58)

***regarding claim 18**, an apparatus comprising:

a supply tank (main tanks 9a-9d, Fig. 1);

a pump (air compressing pump 21, Fig. 2);

a print cartridge (subtanks 7a-7d, Fig. 1) having a printhead (recording head 6, Fig. 2) and a print cartridge reservoir (unreferenced space in subtank 7 containing float 31, Fig. 2);

interface electronics (control circuit of Fig. 16) coupling the print cartridge, the pump and the supply tank (Fig. 16); and

a set of computer executable instructions operable on the device to:

track an ink volume in the print cartridge reservoir (subtank consumed ink counter 109; step S12, Fig. 17 and col. 19, lines 16-18);

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track an ink volume in the supply tank (main tank residual ink counter 110; step S20, Fig. 17 and col. 19, lines 57-59); and

transfer ink from the supply tank to the print cartridge reservoir via the pump (col. 2, lines 42-53) when an ink volume remaining in the supply tank substantially equals an ink volume used to refill the print cartridge reservoir (steps S13-S20 INK END, Fig. 17; since all the ink from the supply tank is used in these steps, the volume remaining must have been equal to the volume used to refill the cartridge)

***regarding claim 22**, a pumping session of the pump is operable to mix ink between the supply tank and the print cartridge reservoir (col. 5, lines 14-18; for the purpose of this rejection, mixing ink includes mixing supply tank ink into cartridge reservoir ink)

***regarding claim 23**, an image forming device, comprising:

a processor (e.g. consumed ink amount calculator 107, Fig. 16);

a memory (coefficient provider 108) coupled to the processor (Fig. 16);

an ink transfer and tracking module (control circuit of Fig. 16) to:

track an ink volume in the print cartridge reservoir (col. 16, lines 61-63);

track an ink volume in the supply tank (col. 17, lines 10-13); and

transfer ink from the supply tank to the print cartridge reservoir (col. 5, lines 14-18) when a total ink volume remaining in the supply tank substantially equals an ink volume to refill the print cartridge reservoir (col. 5, lines 14-18 and col. 20, lines 1-8; the total ink volume in the supply tank is used to refill the cartridge reservoir at some point since the supply tank becomes empty)

***regarding claim 24**, the ink transfer and tracking module includes software (col. 27, lines 17-18) to track print cartridge reservoir and supply tank ink volumes (ink counters 109 and

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110 are based on results from calculator 107, Fig. 16) based on print job ink consumption (col. 16, lines 52-60)

***regarding claim 26**, the ink transfer and tracking module includes software to transfer ink from the supply tank to the print cartridge reservoir when the print cartridge is empty (col. 24, lines 52-58 and steps S42-44, Fig. 23)

***regarding claim 27**, a printing device, comprising:

a processor (e.g. consumed ink amount calculator 107, Fig. 16);

a memory (e.g. coefficient provider 108, Fig. 16);

a print cartridge having a printhead (recording head 6, Fig. 2) and a print cartridge reservoir (subtank 7, Fig. 2); and

interface electronics (control circuit of Fig. 16) coupling the processor, the memory, and the print cartridge (Fig. 16);

means (subtank consumed ink counter 109, Fig. 16) for tracking an ink volume in the print cartridge reservoir (col. 16, lines 61-63);

means (main tank residual ink counter 110, Fig. 16) for tracking an ink volume in a supply tank (col. 17, lines 14-18); and

means (print controller 100, Fig. 16) for refilling the print cartridge reservoir from the supply tank (col. 5, lines 14-18) when an ink volume remaining in the supply tank substantially equals an ink volume to refill the print cartridge reservoir to a predetermined level (col. 6, lines 53-58)

***regarding claim 28**, the means for tracking the ink volume in the print cartridge reservoir and supply tank reservoir (ink counters 109 and 110 are based on results from

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calculator 107, Fig. 16) includes software (col. 27, lines 17-18) for tracking ink volume consumption based on processed print jobs (col. 16, lines 52-60)

***regarding claim 30**, means for refilling the print cartridge reservoir from the supply tank when an ink volume remaining in the supply tank substantially equals an ink volume to refill the print cartridge reservoir to a predetermined level includes software (col. 17, lines 21-25) operable to track a total ink volume remaining in the supply tank (col. 17, lines 14-18) and an amount of ink consumed since a previous print cartridge reservoir refill (col. 16, line 61 – col. 17, line 6)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-10, 14, 25 and 29 are rejected under 35 U.S.C. 103(a) as being obvious over Kimura et al. (US 6796627 B2 in view of Farr et al. (US 6874861 B2).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter

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disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Kimura et al. teach the following:

***regarding claim 6, a method for refilling a print cartridge reservoir, comprising:**

tracking an ink volume consumed from the print cartridge reservoir (subtank consumed ink counter 109; step S12, Fig. 17 and col. 19, lines 16-18);

refilling the print cartridge reservoir using a variable refill frequency (col. 6, lines 58-61) based on the ink volume consumed from the print cartridge reservoir (step S12, Fig. 17) and the ink volume in the supply tank (e.g. step S20, Fig. 17); and

wherein refilling occurs when a total ink volume remaining in the supply tank is equal to a volume which would refill the print cartridge reservoir to an initial fill level (e.g. steps S13-S17, Fig. 17)

***regarding claim 7, refilling also occurs when the print cartridge reservoir is empty (col. 24, lines 52-58 and steps S42-44, Fig. 23)**

***regarding claim 8, the print cartridge reservoir (subtanks 7a-7d, Fig. 1) is located on a moveable print carriage (col. 5, lines 10-11)**

***regarding claim 9, the supply tank (main tanks 9a-9d, Fig. 1) is located off-axis from the moveable print carriage (col. 5, lines 14-18)**

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***regarding claim 10**, one supply tank is used to refill multiple print cartridge reservoirs (col. 1, lines 48-50)

***regarding claim 14**, tracking print cartridge reservoir and supply tank volumes based on processed print jobs (col. 16, lines 52-61 and col. 17, lines 14-18)

***regarding claim 25**, the ink transfer and tracking module includes software to track ink volumes (col. 27, lines 17-18 and Fig. 16)

***regarding claim 29**, the means for tracking tracking the ink volume in the print cartridge reservoir and supply tank reservoir includes software (col. 27, lines 17-18 and Fig. 16)

Kimura et al. teach all claimed limitations except for the following:

***regarding claim 3**, tracking the ink volume in the supply tank includes using software to track the ink volume transferred from the supply tank to the print cartridge reservoir

***regarding claim 4**, the ink volume transferred is tracked using electrical probes connected to a flexible conduit coupling the supply tank to the print cartridge reservoir

***regarding claim 5**, the ink volume transferred is tracked using an optical sensor

***regarding claim 6**, tracking an ink volume transferred from a supply tank to the print cartridge; and

ink volume in the supply tank is tracked using the volume transferred from the supply tank

***regarding claim 14**, tracking print cartridge reservoir and supply tank volumes based on ink volumes transferred from the supply tank to the print cartridge reservoir

***regarding claim 25**, track ink volumes based on a pumping session from the supply tank to the print cartridge reservoir

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***regarding claim 29**, track ink volumes based on volume transfer from the supply tank to the print cartridge reservoir

Farr et al. teach the following:

***regarding claim 3**, tracking the ink volume in the supply tank includes using software (col. 4, lines 26-30) to track the ink volume transferred from the supply tank to the print cartridge reservoir (col. 13, lines 35-42)

***regarding claim 4**, the ink volume transferred is tracked using electrical probes (electrodes 32 and 34, Fig. 2) connected to a flexible conduit coupling the supply tank to the print cartridge reservoir (col. 3, lines 43-56 and Fig. 2)

***regarding claim 5**, the ink volume transferred is tracked (col. 13, lines 35-42) using an optical sensor (col. 1, lines 27-30)

***regarding claim 6**, tracking an ink volume transferred from a supply tank to the print cartridge (col. 13, lines 35-38); and

ink volume in the supply tank is tracked using the volume transferred from the supply tank (col. 13, lines 38-42)

***regarding claim 14**, tracking print cartridge reservoir and supply tank volumes based on ink volumes transferred from the supply tank to the print cartridge reservoir (col. 13, lines 35-44)

***regarding claim 25**, track ink volumes based on a pumping session from the supply tank to the print cartridge reservoir (col. 13, lines 35-44)

***regarding claim 29**, track ink volumes based on volume transfer from the supply tank to the print cartridge reservoir (col. 13, lines 35-44)

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At the time of invention, it would have been obvious to a person of ordinary skill in the art to track the volume in the supply tank by tracking the ink volume transferred from the supply tank in the invention of Kimura et al. The motivation for doing so, as taught by Farr et al., is to determine characteristics of the printing fluid and a printing fluid level (col. 4, lines 2-10).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al. (US 6796627 B2 as modified by Farr et al. (US 6874861 B2), as applied to claim 6 above, and further in view of Matsumoto et al. (JP 2002-029041).

Kimura et al. as modified by Farr et al. teach all claimed limitations except for the following:

***regarding claim 11, one print cartridge reservoir is refilled from multiple supply tanks**

Matsumoto et al. teach the following:

***regarding claim 11, one print cartridge reservoir is refilled from multiple supply tanks**
(abstract)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize multiple supply tanks to refill one print cartridge in the invention of Kimura et al. as modified by Farr et al. The motivation for doing so, as taught by Matsumoto et al., is to enable replacement of an ink tank without interrupting recording (abstract).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al. (US 6796627 B2) in view of Shibata et al. (US 5561453).

Kimura et al. teach the following:

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***regarding claim 19**, ink is transferred from the supply tank to the print cartridge reservoir through a flexible conduit using a pump (col. 5, line 63 – col. 6, line 7 and col. 6, lines 15-19)

Kimura et al. do not expressly teach the following:

***regarding claim 19**, the pump is a peristaltic pump

Shibata et al. teach the following:

***regarding claim 19**, the pump is a peristaltic pump (col. 4, lines 37-42)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize a peristaltic pump into the invention of Kimura et al. The motivation for doing so, as taught by Shibata et al., is to urge the ink through tubing (col. 4, lines 37-42).

Claims 20 and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al. (US 6796627 B2) as modified by Shibata et al. (US 5561453), as applied to claim 19 above, and further in view of Hahs et al. (US 5710579).

Kimura et al. as modified by Shibata et al. do not expressly teach the following:

***regarding claim 20**, one or more sensors positioned adjacent to the flexible conduit to detect a fluid and air mixture therein

***regarding claim 21**, the flexible conduit is transparent, and wherein the apparatus further includes a light emitting source and a light detector positioned opposite one another around the transparent flexible conduit

Hahs et al. teach the following:

***regarding claim 20**, one or more sensors (sensors 34, Figs. 5 and 6) positioned adjacent to the flexible conduit to detect a fluid and air mixture therein (col. 4, lines 25-29)

***regarding claim 21**, the flexible conduit is transparent (col. 4, lines 26-27), and wherein the apparatus further includes a light emitting source and a light detector positioned opposite one another around the transparent flexible conduit (col. 4, lines 24-25 and Fig. 6)

At the time of invention, it would have been obvious to a person of ordinary skill in the art to utilize sensors adjacent to the flexible conduit into the invention of Kimura et al. as modified by Shibata et al. The motivation for doing so, as taught by Hahs et al., is to detect voids in the ink flow (col. 1, lines 56-62).

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Communication with the USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelby Fidler whose telephone number is (571) 272-8455. The examiner can normally be reached on MWF 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vip Patel can be reached on (571) 272-2458. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SF 7/12/06

Shelby Fidler
Patent Examiner
AU 2861



Vip Patel
Supervisory Examiner
AU 2861